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Ascertaining the Overall Occurrence of Dental Fluorosis in Students of Selected Secondary Schools in Rivers State

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ABSTRACT

Public health places a premium on understanding the amount of fluoride in potable water and other toothpastes, as well as how it affects skeletal and dental tissues to cause fluorosis. Fluorosis is, however, poorly understood and known in Nigeria. The goal of this research was to Ascertain the Overall Occurrence of Dental Fluorosis in Students of Selected Secondary Schools in Rivers State. A cross-sectional survey of 541 students from selected secondary schools in Rivers State who were between the ages of 9 and 17 was carried out. All students present at school on the day of data collection had their mouths examined by oral health professionals as part of a quasi-experimental method. Each subject was supported by a torch light while seated on a chair, and their teeth were examined for dental fluorosis in their wet state. The presence of dental fluorosis and the severity of it were documented using Dean's Dental Fluorosis. The presence of dental fluorosis and the severity of it were documented using Dean's Dental Fluorosis. (358) Dental fluorosis impacted 66.17% of the students, varying in severity from very mild to severe cases.

KEYWORDS:

Ascertaining, Overall, Occurrence, Dental, Fluorosis.



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Introduction

Dental fluorosis is a prevalent dental condition marked by the hypomineralization of tooth enamel brought on by consuming too much fluoride during enamel formation. (Wikipedia 2021, Neville et al 2015, Wong et al 2010). It manifests as aesthetic changes in the enamel that result in varying degrees of inherent tooth discoloration and, occasionally, actual physical harm to the teeth. During the period of tooth calcification (amelogenesis), it was defined as a hypoplasia of the dental enamel brought on by the consumption of an excessive quantity of fluoride from salt water, toothpaste, and dietary fluoride supplements. (Dean 2015). It can range from mild to serious. The dose, duration, and age of the person during exposure all affect how severe the condition will be. (Dean, 2015). The loss of regular tooth form is accompanied by brown staining, pitting, and severe fluorosis. The most severe form of fluorosis is typically observed when malnutrition, hot weather, and elevated naturally occurring fluoride levels in the water supply are present. (Dean, 2015). Dental fluorosis, which manifests as stains on the enamel surface of teeth, is brought on by ingesting too much fluoride when teeth are developing in the gums (0–6 years), or before the teeth emerge into the mouth. The permanent anterior teeth are the most crucial from an aesthetic standpoint because they are the most noticeable and, in some cases, cannot be changed in the event of any anomalies. Although some research indicates that the first two years of life are the most crucial time, the period when these teeth are most prone to developing fluorosis runs from birth to age six. (Mallishery et al 2020, Lennon, 2006). The routine ingestion of fluoride toothpaste by young children is thought to be a particularly important component in the development of cosmetically significant fluorosis, according to the British Dental Association and other specialized groups. Additional fluoride intake cannot cause further harm after the teeth's crowns have developed because post-eruptive topical fluoride applications are ineffective. (Mallishery 2020; Buzalat& Levy 2011).

Materials and Method

Research Design

Cross sectional study design.

Setting of Study

The research was a field work carried out in school environment selected from five community secondary schools in five Local Government Areas in River State.

Study Population

This study was carried out on boys and girls within the age range 09 – 17 years attending five community secondary schools in five local government areas in Rivers State with climatic condition between 25 and 28°C. The occupation of the people of the community is mainly farming, fishery and trading.

Sample Size

A total of 540 students with 240 boys and 300 girls were present in the schools on the day of data collection.

Sampling Technique

A Quasi-experimental technique (design) was employed in which junior secondary school (JSS) 1, 2&3 students who attended school on the day of data collection were examined and the condition of their teeth was noted.

Instrument for Data collection

The instrument used for data collection in this study were questionnaire which was used to gather demographic data and observation (oral examination) used to gather data on dental fluorosis and all data was recorded on the data sheet.

Validity of Instrument

To ensure validity of instrument, the questionnaire used for the interview was developed and given to a consultant and lecturer for input and modification. Oral examination was also done by qualified dental personnel.

Reliability of Instrument

Reliability was ascertained by pre-testing 5 copies of the instrument (questionnaire) at the schools and was checked by using Spearman rank order correlation coefficient.

Ethical Consideration

A letter was previously written to the schools indicating interest and intension of the researcher. Approval to conduct the study was obtained from the school authorities.

Results

After examination of 541 students; 66.17% (N = 358) of the students were affected with various stages of fluorosis ranging from very mild to severe cases of fluorosis. While 33.83% (n=183) of the students were not affected or had no trace of dental fluorosis.

Table 1: Overall occurrence of dental fluorosis in the schools in Rivers State.

Name of School	Total students	Total Girls	Total Boys	unaffected Boys	unaffected Girls	Questionable Boys	Questionable Girls	very mild Boys	very mild Girls	Mild Boys	Mild Girls	Moderate Boys	Moderate Girls	Severe Boys	Severe Girls	Total affected	Age Range
IBCSS	132	66	66	17	19	6	4	10	11	18	13	6	16	4	8	96	10-17yrs
UDSS	121	40	81	23	26	3	18	8	29	5	6	1	2	0	0	72	09-14yrs
CSSNO	117	53	64	19	21	11	18	9	16	8	9	2	1	3	0	77	10-17yrs
CSSO	84	36	48	11	22	17	18	8	7	0	0	0	0	0	1	51	11-17yrs
CSSA	87	46	41	13	12	24	22	9	7	0	0	0	0	0	0	62	9-16yrs
TOTAL	541	241	300	83	100	61	80	44	70	31	28	9	19	7	9	358	

- 1 (IBSSC) Means Ibaa Community Secondary School
- 2 (UDSS) Means University Demonstration Secondary School Aluu
- 3 (CSSNO) Means Community Secondary School NkpoluOroworukwo
- 4 (CSSO) Means Community Secondary School Okoro-nu-Odo
- 5 (CSSA) Means Community Secondary School Alode

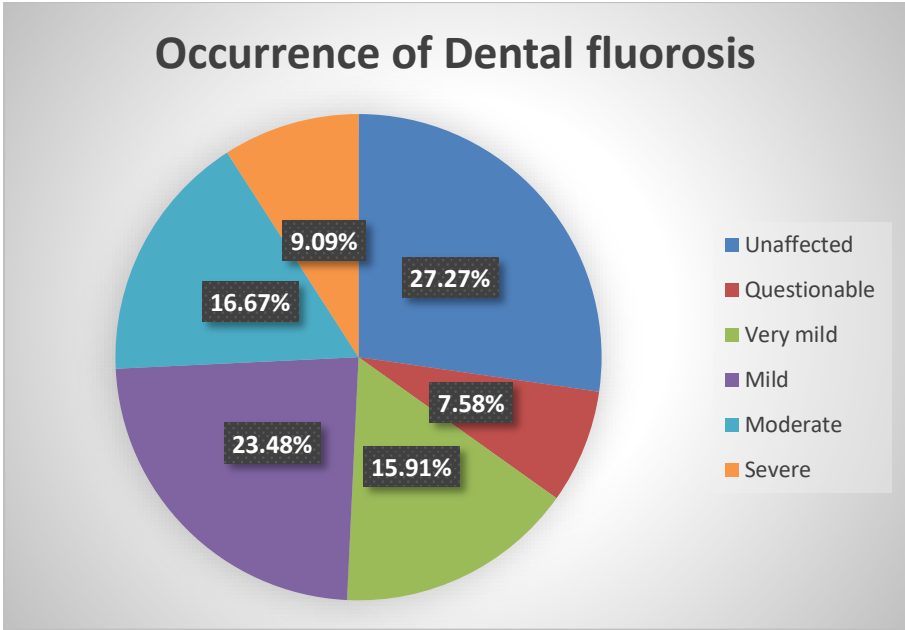


Figure 1: Prevalence of dental fluorosis in Ibaa community secondary school

X	X
Unaffected	27.27%
Questionable	7.58%
Very mild	15.91%
Mild	23.48%
Moderate	16.67%
Severe	9.09%

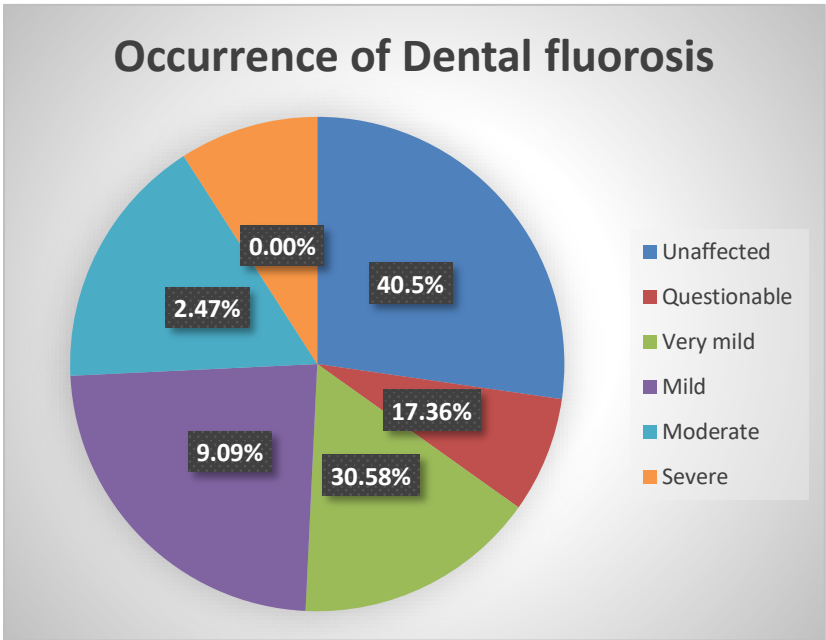


Figure 2: Prevalence of dental fluorosis in UDSS, Aluu.

The chart above shows the relative proportion of the occurrence of dental fluorosis in UDSS, Aluu with the highest occurring very mildly and 0.0% severe.

X	X
Unaffected	40.5%
Questionable	17.36%
Very mild	30.58%
Mild	9.09%
Moderate	2.47%
Severe	0.00%

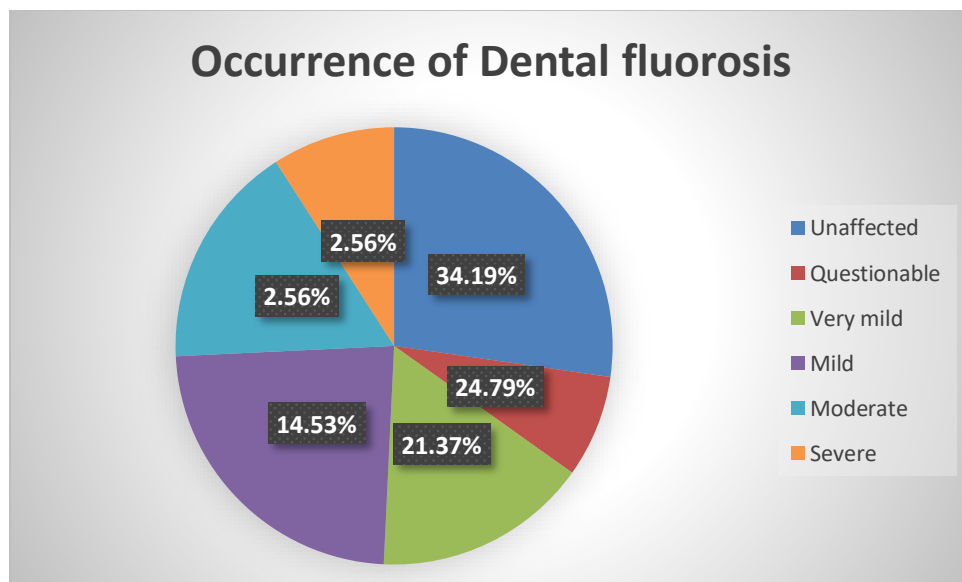


Figure 3: Prevalence of dental fluorosis in community secondary school NkpoluOroworukwo.

The chart shows the relative proportion of the occurrence of dental fluorosis in NkpoluOroworukwu with the highest occurring very mildly and 2.56% severe.

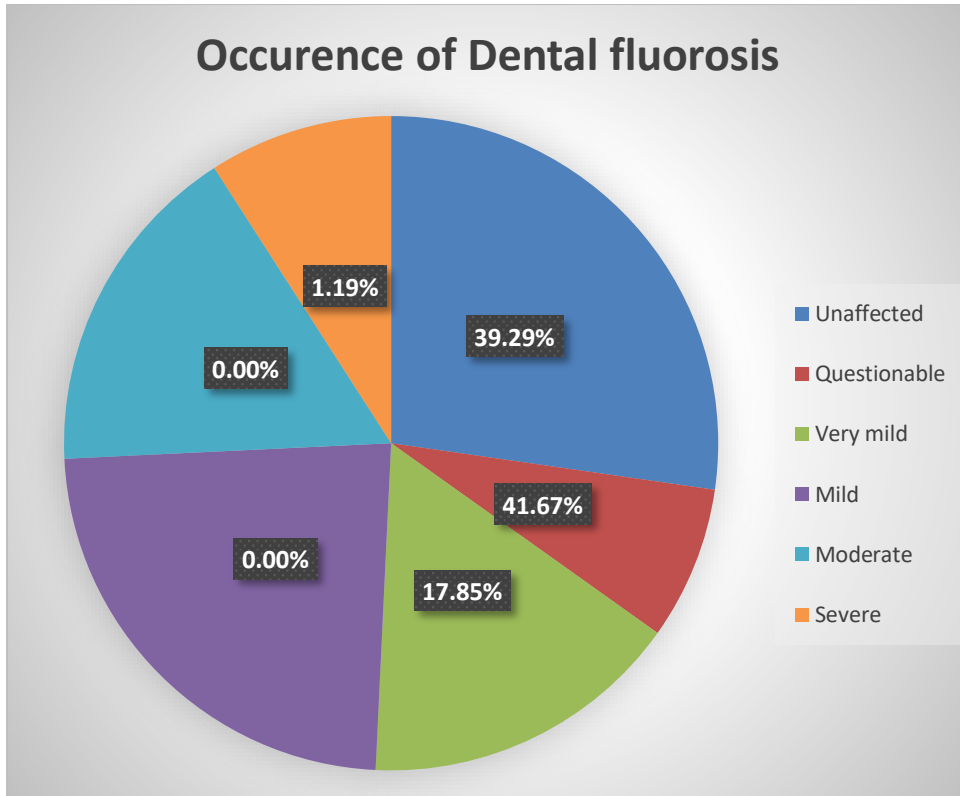


Figure 4: Prevalence of dental fluorosis in community secondary school Okoro-Nu-Odo.

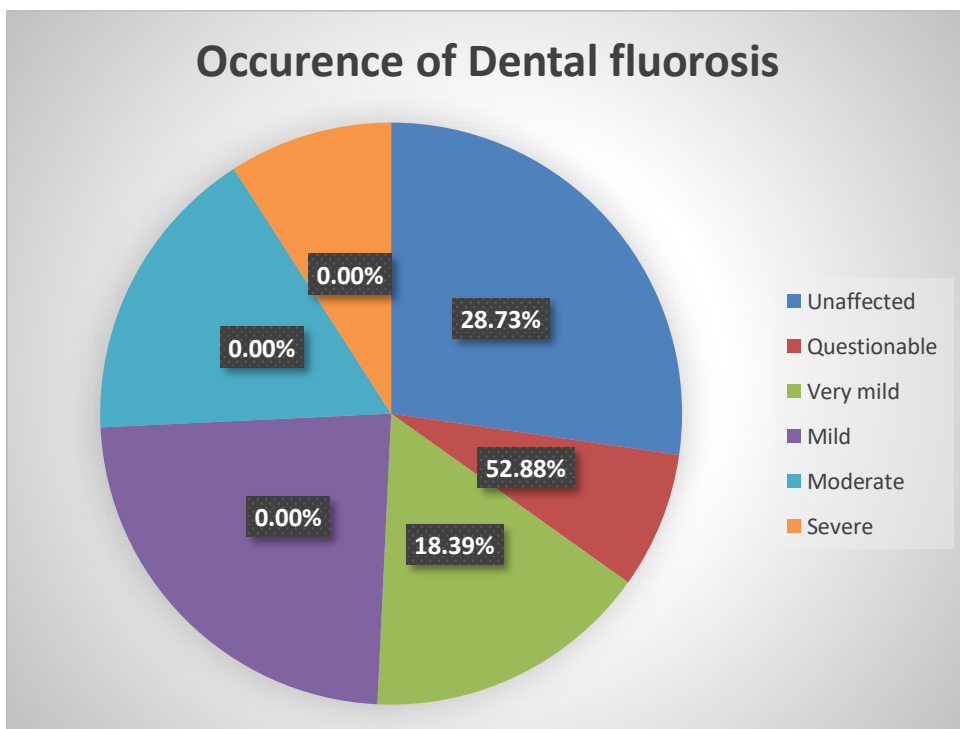


Figure 5: Occurrence of dental fluorosis in community secondary school Alode in Eleme

The chart shows the relative proportion of the occurrence of dental fluorosis in Alode, Eleme, with the highest occurring 18.39% very mild.

Discussion

In order to ensure the optimum preservation of one's self-esteem as well as general wellbeing of an individual, oral health, an integral part of one's overall health, has recently been advocated in all ramifications. Numerous diseases impact the oral cavity as a result of a variety of factors, from misconceptions about oral health to a careless attitude toward it, which makes it difficult to achieve optimum oral health. The occurrence of these diseases places a burden on the people impacted as well as the medical professionals, necessitating a multi-axial management strategy in order to return oral health to its ideal state. Dental fluorosis is a common disease that, in literary terms, replaced dental caries as the main oral cavity disease of public health concern. It is obvious that Rivers State has a greater percentage of affected individuals when comparing the results of the community dental fluorosis index of 0.42 of Oloibiri in Ogbia L/GA of Bayelsa State and that of 0.8 of the L.G. As of Rivers State.

Conclusion

A portion of residents in communities with only naturally occurring fluoride in the water supply and a portion of residents in areas where the natural fluoride in the water has been artificially supplemented to help avoid tooth decay are affected by dental fluorosis. Therefore, it's crucial to remember that while minimizing the danger of fluorosis, fluoridated water can still provide the greatest amount of dental benefits. With a community dental fluorosis index of 0.8, which is higher than the threshold for public health importance of 0.6, dental fluorosis is a public health issue in Rivers State. Therefore, more research regarding the origin and level of fluoride in the water needs to be done.

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